

## RESEARCH REPORT DOCUMENTATION PAGE

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14. Supplementary Notes			
15. Abstract  <b><u>Purpose and Need</u></b> 3U18 patch mix was one of two patch mix materials used on a dowel bar retrofit test section constructed by the North Dakota Department of Transportation (NDDOT), in 1995. The other patch mix material was a proprietary product called Patchroc 10-60. Shortly after construction, however, signs of shrinkage cracks began occurring within the 3U18 patch mix itself and along the border between the patch mix and the existing concrete. It was uncertain, at the time, whether the distresses were caused by construction practices or from a mix design problem. As a result of its questionable performance, Minnesota specified 3U18 patch mix material has not been used on subsequent dowel bar retrofit repair projects.  <b><u>Objective</u></b> The objective of this study is to evaluate the construction methods and performance characteristics of Minnesota specified 3U18 when used as a patch mix material on dowel bar retrofit projects.  <b><u>Scope</u></b> During the 1997 construction season, NDDOT performed a dowel bar retrofit of faulting concrete joints along a section of roadway on I-29 south of Fargo, North Dakota. Patchroc 10-60 patch mix material was used exclusively on the project. The 3U18 mix was placed in 18 slots near reference point 7 in the SB lane. The NDDOT evaluated the Minnesota specified 3U18 patch mix material for a period of three years. Items evaluated were: Construction methods in mixing and placing the 3U18 mix and how they compare to those used on the experimental project constructed in 1995, evaluate the performance of the 3U18 patch mix and compare to that used in the experimental project constructed in 1995, compare performance of adjacent Patchroc 10-60 sections with that of the 3U18 patch mix sections, percent load transfer across the joints where dowel bar slots contain 3U18 patch mix.  <b><u>Summary</u></b> Evaluations show the Minnesota specified 3U18 patch mix material is performing well with no detectable distresses occurring. FWD results show load transfer across the joints to be 93%. Adjacent dowel bar slots containing Patchroc 10-60 patch mix material also show load transfers of 95%. One detectable distress is noticed in the Patchroc mix which is raveling in every slot but has not been observed in the 3U18 slots.  <b><u>Recommendation</u></b> It is recommended that the 3U18 mix used in this research project can be used in other NDDOT projects provided strict adherence to the mix design and construction procedures can be followed. If this can not be achieved, the load transfer efficiency and durability characteristics will suffer.			
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